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FAMILY LYCEUM.

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THE ANCIENTS.

SOLOMON.

SOLOMON, a king of the Jews, eminently distinguished for his wisdom, wealth, and extent of territory, was the son of David by Bathsheba, formerly the wife of Uriah, and born in the year B. C. 1033. By the influence of Bathsheba, and the recommendation of Nathan, Zadok, and other friends, who thought it necessary to counteract the views and measures of Adonijah, David's eldest son, he was proclaimed the destined successor of his father before his death. When this event took place, B. C. 1015, he ascended the throne of all Israel, not only without opposition, but amidst the acclamations of the people. For his greater security, he cruelly ordered Adonijah, and Joab who was attached to his interest, to be put to death. As soon as he was confirmed in his kingdom, he contracted an alliance with Pharaoh, king of Egypt, and married his daughter, whom he brought to Jerusalem, and for whom he afterwards built a sumptuous palace, receiving for her dowry the city of Gezer, which had been taken from the Canaanites. About this time he led his troops, and all Israel, to Gibeon, where he offered a hundred thousand burnt offerings upon the brazen altar. In the following night he is said to have been favored with a vision, in which God promised to grant him whatsoever he desired; and as the object of his prayer was wisdom for discharging the duties of his office, his request was fully granted. Upon his return to Jerusalem, he offered a great number of sacrifices on the altar, before the ark of the Lord, and made a great feast for his servants. As an instance of his wisdom, he decided a dispute between two mothers, who claimed the same child. 1 Kings, iii. 16, 28. In token of the acceptableness of his petition, he also obtained, more than he asked for, a gratuitous donation, on the part of God, of riches and honor; which were amply displayed in the magnificence of his court, the amount of his revenues, the multitude of his subjects, the number of his civil and military establishments, and a variety of other circumstances, which rendered him one of the most celebrated monarchs of the East. His reign was peaceful and prosperous; Judah and Israel were united and secure, and his neighbors either formed an alliance with him, or paid him tribute. His dominions extended from the Euphrates to the Nile; and his reputation for wisdom was spread through all nations.

As soon as Hiram, king of Tyre, heard of his accession to the throne of Israel, he deputed ambassadors to congratulate him; and with the acknowledgment of this message, he requested to be supplied with wood, and able artificers to assist in constructing the temple at Jerusalem, which, in deference of his father's vow, he had undertaken to execute. The completion of this magnificent edifice conferred singular celebrity on the reign of Solomon. It was begun in the fourth year of his reign, and the second after the death of David, B. C. 1012, and 480 years after the Exodus. In the various departments of this great work, he employed no less than 183,000 persons. This wonderful structure was completed in the eleventh year of Solomon, or in the short space of seven years; and it was solemnly dedicated on Friday, Oct. 30, B. C. 1000 years. Solomon afterwards built two palaces, one for himself and another for his queen; and the constructions of the temple and palaces occupied a period of twenty years. He also built the walls of Jerusalem; and he repaired and fortified a great number of cities. The great expense which he thus incurred was defrayed by a commerce which he carried on from Ezion-Geber and Elath, on the Red Sea, to Ophir.

Hiram, king of Tyre, furnished him with mariners, who instructed the subjects of Solomon. They performed this voyage in three years, and brought back abundance of curiosities, and great riches in gold and other things.

Solomon, however, notwithstanding the wisdom which rendered him so famous, had not sufficient fortitude for resisting the temptations that accompanied his prosperity. He was betrayed, in the most culpable and disgraceful manner, into the vices attendant on luxury and sensuality. Besides 700 wives, he had 300 concubines; and in his declining age, though he had erected a temple for Jehovah the true God, and was thus implicitly pledged to preserve the religion of the Jews pure and uncorrupted, the influence of those heathen women caused him to degenerate into the most inexcusable idolatry, setting up as objects of worship, Ashtoreth, goddess of the Sidonians, Moloch, the idol of the Ammonites, and Chemosh, the god of the Moabites, and building for them temples on the Mount of Olives, over-against the east of Jerusalem. As a just punishment of his culpable conduct, the sovereigns of Edom and Syria were excited against him, and he saw, before his death, the commencement of that revolt which terminated in the division of the kingdom.

Solomon closed his life and reign in the year B. C. 975, at the age of 58, having reigned 40 years.—[*Platt's Univ. Biog.*

EPICURUS.

EPICURUS, the greatest philosopher of his age, was born at Gargettium, in Athens, about B. C. 340, in the hundred and ninth Olympiad. He settled in Athens in a fine garden which he purchased, where he lived with his friends in great tranquillity, and educated a great number of disciples. They lived in common with their master. The respect which his followers paid to his memory is admirable; his school was never divided, but his doctrine was followed as an oracle. His birth-day was still kept up in Pliny's time; the month he was born in was observed as a continual festival, and they placed his picture everywhere. He wrote many books, and valued himself upon making no quotations. He raised the oratorical system to great reputation, though he was not the inventor of it, but had only made some changes in that of Democritus. As to his doctrine concerning the supreme good, or happiness, it was very liable to be misrepresented, and some ill effects proceeded from thence, which discredited his sect. He was charged with perverting the worship of the gods, and inciting men to debauchery; but he did not forget himself on this occasion; he published his opinions to the world. He wrote some books of devotion; recommended the veneration of the gods; sobriety and chastity; and it is certain that he lived in an exemplary manner, and conformably to the rules of philosophical wisdom and frugality. Timocrates, a dissenter of his sect, spoke very scandalously of him. Gassendus has given us all he could collect from the ancients concerning the person and doctrine of this philosopher. The doctrine, or system of philosophy maintained by Epicurus and his followers, consisted of three parts: canonical, physical, and ethereal. The first was about the canons, or rules of judging. The censure which Tully passed upon him for his despising logic, will hold true only with regard to the logic of the Stoics, which he could not approve of, as being too full of nicety and quirk. Epicurus was not acquainted with the analytical method of division and augmentation, nor was he so curious in modes and formation as the Stoics. Soundness and simplicity of sense, assisted with some natural reflections, was all his art. His search after truth proceeded only by the senses; to the evidence of which he gave so great a certainty, that he considered them as an infallible rule of truth, and termed them the first natural light of mankind. In the second part of his philosophy, he laid down atoms, space, and gravity, as the first principles of all things; he did not deny the existence of God; but thought it beneath his majesty to concern himself with human affairs; he held him a blessed immortal being, having no affairs of his own to take care of, and above meddling with those of others. As to his ethics, he made the supreme good of man to consist in pleasure, and consequently supreme evil in pain. Nature itself, says he, teaches us this truth; and prompts us, from our birth, to procure whatever gives us pleasure, and to avoid what gives us pain. To this end he proposed a remedy against the sharpness of pain. This was to divert the mind from it, by turning our whole attention upon the pleasure we have formerly enjoyed. He held that the wise man must be happy, as long as he is wise; the pain, not depriving him of his happiness. There is nothing that has a fairer show of honesty than the moral doctrine of Epicurus. Gassendus pretends that the pleasure in which this philosopher has fixed the sovereign good, was nothing else but the highest tranquillity of mind, in conjunction with the most perfect health of body; but Tully, Horace, and Plutarch, as well as almost all the fathers of the church, give us a very different representation; indeed the nature of his pleasure, in which the chief happiness is supposed to be seated, is a grand problem in the morals of Epicurus. Hence there were two kinds of Epicureans, the rigid and the remiss; the first were those who understood Epicurus's notions of pleasure in the best sense, and placed all their happiness in the pure pleasures of the mind, resulting from the practice of virtue: the loose or remiss Epicureans, taking the words of that philosopher in a gross sense, placed all their happiness in sensual pleasure.—[*Ib.*

HOMER.

HOMER, justly celebrated as the prince of poets, flourished, according to Blair, about nine hundred years before the Christian era, though Priestley and others place this event half a century later. Seven cities disputed the glory of having given him birth, viz.:—Smyrna, Rhodes, Colophon, Salamis, Chios, Argos, and Athens; but the probability is, that he was born either on the continent of Lesser Asia, or upon one of the islands near it. We have nothing certain respecting the life of this poet; critics have usually thrown aside as spurious and fabulous the life of Homer, said to have been written by Herodotus. There seems no doubt, that notwithstanding the high reputation and vast celebrity which he has enjoyed for nearly three thousand years, he spent his life in poverty, wandering about from city to city, and from the court of one prince to that of another, obtaining temporary patronage from the recital of his poems. If he were blind, he probably became so in his old age. The origin and composition of the poems attributed to Homer, are involved in as much obscurity as the facts relating to his birth-place and life. In his celebrated poems, the Iliad and Odyssey, the poet has displayed the most consummate knowledge of human nature, and rendered himself immortal by the sublimity, the fire, the sweetness, and elegance of his poetry.—In his Iliad, Homer has described the resentment of Achilles, and its fatal consequences in the Grecian army before the walls of Troy. In the Odyssey, the poet has for his subject the return of Ulysses into his country, with the many misfortunes which attended his voyage after the fall of that city. These poems are each divided into twenty-four books, the same number as there are letters in the Greek alphabet, and though the Iliad claims an uncontested superiority over the Odyssey, yet the same force, the same sublimity and elegance prevail, though divested of its more powerful fire; and the great author of the 'Sublime' compares the Iliad to the mid-day, and the Odyssey to the setting sun; and adds, that the latter still preserves its original splendor and majesty, though deprived of its meridian heat.—Whether they were epic poems in the sense now attached to the word, primarily formed upon a determinate plan, and constituting a whole;—whether they were a fortuitous assemblage of detached parts, connected by some later hand, by means of an assumed subject; or, lastly, whether these rhapsodies were the work of one author or of several, are questions which have exercised, and which still continue to exercise the ingenuity of critics. There is no doubt that the constituent parts of these poems long wandered separately through the principal cities of Greece, and the whole of them are said by Plutarch to have been brought from Asia to Greece by Lycurgus; and their first arrangement, in the order we now have them, is ascribed to Pisistratus. But whatever doubt these circumstances might throw upon the original plan of their composition, it is contended that all the parts so manifestly conspire to that general purpose which is proposed in the Exordium, that they must have flowed from uniform design. The difficulty of conceiving how such long works could be accurately transmitted by memory through ages, previously to the use of writing, increases the intricacy of the question; but in answer to this it has been observed, that the poetry of Homer was so universally admired, that, in ancient times, every man of learning could repeat with facility any passage in the Iliad and Odyssey. These poems, it appears, from the very earliest times, were consulted as authorities for local claims, and controversies were decided respecting boundaries and prerogatives, by lines from the catalogue of Homer's ships. Modern travellers have been astonished to behold the different scenes which the poems of Homer described 3000 years before, still existing in the same unvaried form; and the navigator who steers his course along the Ægean sea, finds all the promontories and rocks which appeared to Nestor and Menelaus, when they returned victorious from the Trojan war. By the ancients Homer was venerated and worshipped as a god. The inhabitants of Chios celebrated vestals in his honor every fifth year; and the people of Cos considered it as their greatest glory that the poet of Greece was buried in their island. Alexander was so much attached to the works of Homer, that he usually placed them under his pillow, with his sword; and he deposited the Iliad in one of the richest and most valuable caskets of Darius, observing, that the most perfect work of human genius ought to be preserved in a box the most valuable and precious in the world.

The best editions of Homer are those of Barnes, Clarke, and Heyne. Pope has translated Homer into rhyme; and Cowper into blank verse. Pope's translation will always be popular, while Cowper's will never be read.—[*Ib.*

VIRGIL.

VIRGIL, a celebrated Roman poet, whose name is familiar to every classical scholar, was born in the year B. C. 70, at Andes, a village near Mantua, and liberally educated at Cremona, Milan, and Naples. His teacher in philosophy was named Syro; and the philosophy in which he was instructed was the Epicurean. From his first eclogue, in which he is supposed to have related his own adventures under the appellation of Tityrus, it appears that he first visited Rome in his thirtieth year, for the purpose of recovering lands that were in the possession of the military belonging to Octavius and Antony, after the war against the republicans; and having been introduced to Octavius by Pollio, or some other person, and to his subsequent patron Mecænas, he succeeded in the object of his visit by their influence. His life, however, was endangered by the violence of the veteran who occupied his farm, and who resisted the surrender of it; so that he was obliged to seek redress by another visit to Rome, and to obtain an order for his re-instatement. His eclogues, which were completed in his thirty-third or thirty-fourth year, were very favorably received; and in his thirty-fourth year he was induced by Mecænas to commence his Georgics; and during a period of seven years, which he employed in the prosecution of them, he resided chiefly at Naples. The latter years of his life were devoted to the Æneid. At this time he was ranked among those friends who were particularly distinguished by the attention and confidence of Augustus. After the death of Marcellus, in the year B. C. 23, he paid that admirable tribute to his memory which occurs in the sixth book of the Æneid, and concerning which Doratus says, that when it was recited before Augustus, in the presence of Octavia, the mother of the deceased, as soon as the words 'Tu Marcellus eris' were pronounced, she fainted away; and afterwards rewarded the poet with ten sesterces, above eighty pounds, for each line of the passage. After the completion of his Æneid, Virgil went to Greece, with a view of further polishing it; and on this occasion Horace is supposed to have addressed him with the third ode of the first book, beginning: Sic, te diva, potens Cypri;' in which he expresses the warmest affection for his brother poet. At Athens he met with Augustus, and proposed returning in his company; but at Megara he was seized with a disorder which detained him, as some say, at Brundusium, or, according to others, at Tarentum, and which soon terminated his life in the year B. C. 19, in the fifty-second year of his age. His remains were conveyed, in pursuance of his request, to Naples, and interred on the Puteolan way. On his death-bed he is said to have expressed a wish that his Æneid, which he regarded as an imperfect work, might be committed to the flames; but it was saved either by the interposition of his

friends Tucca and Varrus, who prevailed upon him to bequeath it to them, on the condition that they should make no alterations in it, or by the injunctions of Augustus to his executors. His modesty, indicated by this wish, was combined with other similar qualities. He was mild and gentle in his manners, unassuming in conversation, sincere and faithful in friendship, so that he was singularly beloved by Augustus, Mecænas, and all the most distinguished persons of that period. His poetical talents, as well as general character, were highly appreciated by his contemporaries, insomuch that, whenever his verses were recited in the theatre in his presence, the audience rose up and paid him the respect which was usually manifested to the emperor. His eminent merit has been also acknowledged by ancient and modern critics; and though they have differed in opinion as to his peculiar and distinguished excellencies, they have generally agreed, as one of his most judicious biographers have said, 'in placing him upon one of the highest seats in Parnassus.' Of the faculty of invention he seems to have possessed a very moderate share, insomuch that his Bucolics, Georgics, and Æneid, abound with traces of imitation, and even of translation; but it is in the diction and phraseology of poetry, in all that constitutes the artist, that his chief excellence consists; and his admirers will not allow that the Virgilian splendor and majesty of style have ever been equalled. In two species of composition Virgil has afforded models to almost all succeeding poets, the didactic and the epic. His fame has been testified by the numerous editions of his works, as well as the commentaries and translations which they have produced. The best editions of Virgil are those of Masvicius at Leuwarden, 2 vols. 4to. 1717; Burman, Amsterdam, 4 vols. 4to. 1746; and Heyne, London, in 1793. We have several translations of this great poet; the most popular of which are, Dryden's, Pitt's, and Warton's; but one, combining their several excellencies, with substantial improvements, and a most valuable commentary, has recently been published by John Ring, in 2 vols. 8vo.—[*Ib.*

INSECTS.

MIGRATORY LOCUST.

This species is to be placed among the most noxious of all insects, or those capable of producing the most dreadful and extensive destruction. Legions of these animals are from time to time observed in various parts of the world, where the havoc they commit is almost incredible: whole provinces are in a manner desolated by them in the space of a few days, and the air is darkened by their numbers; nay even when dead they are still terrible; since the putrefaction arising from their inconceivable number is such, that it has been regarded as one of the probable causes of pestilence in the Eastern regions. This formidable locust is generally of a brownish color, varied with pale red or flesh-color, and the legs are frequently blueish. In the year 1748, it appeared in irregular flights in several parts of Europe, as in Germany, France, and England; and in London itself and its neighborhood great numbers were seen: they perished however in a short time, and were happily not productive of any material mischief, having been probably driven by some irregular wind out of their intended course, and weakened by the coolness of the climate.

From a paper published in the 18th volume of the Philosophical Transactions we find, that in the year 1693, some swarms of this species of locust settled in some parts of Wales. Two vast flights were observed in the air not far from the town of Dol-galken in Merionethshire; the others fell in Pembrokeshire. From a letter published in the 38th volume of the same work it appears that some parts of Germany, particularly the Marsh of Brandenburgh, &c., suffered considerable injury from the depredations of these animals. They made their appearance in the spring of the year 1732, from flights which had deposited their eggs in the ground the preceding year. They attacked and devoured the young spike of the wheat, &c. and this chiefly by night, and thus laid waste many acres at a time beyond all hope of recovery. In the 46th volume of the same Transactions, we find a description of the ravages of these animals in Walachia, Moldavia, Transylvania, Hungary, and Poland, in the years 1747 and 1748.

'The first swarms entered into Transylvania in August, 1747: these were succeeded by others, which were so surprisingly numerous, that when they reached the Red Tower, they were full four hours in their passage over that place: and they flew so close that they made a sort of noise in the air by the beating of their wings against one another. The width of the swarm was some hundreds of fathoms, and its height or density may be easily imagined to be more considerable, inasmuch as they hid the sun, and darkened the sky, even to that degree, when they flew low, that people could not know one another at the distance of twenty paces; but, whereas they were to fly over a river that runs in the vallies of the Red Tower, and could find neither resting-place nor food; being at length tired with their flight, one part of them lighted on the unripe corn on this side of the Red Tower, such as millet, Turkish wheat, &c.; another pitched on a low wood, where, having miserably wasted the produce of the land, they continued their journey, as if a signal had actually been given for a march. The guards of the Red Tower attempted to stop their irruption into Transylvania by firing at them*; and, indeed, where the balls and shot swept through the swarm, they gave way and divided; but, having filled up their ranks in a moment, they proceeded on their journey. In the month of September, some troops of them were thrown to the ground by great rains and other inclemency of the weather; and thoroughly soaked with wet, they crept along in quest of holes in the earth, dung, and straw; where, being sheltered from the rains, they laid a vast number of eggs, which stuck together by a viscid juice, and were longer and smaller than what is commonly called an ant's egg†, very like grains of oats. The females having laid their eggs, die, like the silk-worm; and we Transylvanians found by experience, that the swarm which entered our fields by the Red Tower, did not seem to intend remaining there, but were thrown to the ground by the force of the wind, and there laid their eggs: a vast number of which being turned up and crushed by the plough, in the beginning of the ensuing spring, yielded a yellowish juice.—In the spring of 1748, certain little blackish worms were seen lying in the fields and among the bushes, sticking together, and collected in clusters, not unlike the hillocks of moles or ants. As nobody knew what they were, so there was little or no notice taken of them, and in May they were covered by the shooting of the corn sown in winter; but the subsequent June discovered what those worms were; for then, as the corn sown in spring was pretty high, these creatures began to spread over the fields, and became destructive to vegetables by their numbers. Then at length the country people, who had slighted the warning given them, began to repent of their negligence; for as these insects were now dispersed all over the fields, they could not be extirpated without injuring the corn. At that time they differed little or nothing from our common grasshopper, having their head, sides, and back, of a dark color, with a yellow belly, and the rest of a reddish hue. About the middle of June, according as they were hatched, sooner or later, they were generally a finger's length, or somewhat longer, but their shape and color still continued.—Towards the end of June, they cast off their outward covering, and then it plainly appeared that they had wings, very like the wings of bees, but as yet unripe, and unexpanded; and then their body was very tender, and of a yellowish green; then, in order to render themselves fit for flying, they gradually unfolded their wings with their binder feet, as flies do; and as soon as any of them found themselves able to use their wings, they soared up, and by flying round the others, enticed them to join them: and thus their numbers increased daily; they took circular flights of twenty or thirty yards square, until they were joined by the rest; and after miserably laying waste their native fields, they proceeded elsewhere in large troops. Wheresoever those troops happened to pitch, they spared no sort of vegetable; they eat up the young corn and the very grass; but nothing was more dismal than to behold the lands in which they were hatched; for they so greedily devoured every green thing thereon, before they could fly, that they left the ground quite bare.

The ravages of locusts in various parts of the world, at different periods, are recorded by numerous authors, and a summary account of their principal devastations may be found in the works of Aldrovandus.—Of these a few shall be selected as examples.—Thus, in the year 593 of the Christian era, after a great drought, these animals appeared in such vast legions as to cause a famine in many countries. In 677, Syria and Mesopotamia were over-run by them. In 852, immense swarms took their flight from the eastern regions into the west, flying with such a sound that they might have been mistaken for birds: they destroyed all vegetables, not sparing even the bark of trees and the thatch of houses; and devouring the corn so rapidly as to destroy, on computation, an hundred and forty acres in a day: their daily marches or distances of flight were computed at twenty miles; and these were regulated by leaders or kings, who flew first, and settled on the spot which was to be visited at the same hour the next day by the whole legion: these marches were always undertaken at sunrise. These locusts were at length driven by the force of the wind into the Belgic ocean, and being thrown back by the tide and left on the shores, caused a dreadful pestilence by their smell. In 1271, all the corn-fields of Milan were destroyed; and in the year 1339, all those of Lombardy. In 1541, incredible hosts afflicted Poland, Walachia, and all the adjoining territories, darkening the sun with their numbers, and ravaging all the fruits of the earth.—[*Gallery of Nature and Art.*

METEOROLOGY.

SNOW.

Snow is formed by a process of regular crystallization among the minute frozen particles of water floating in the air. Previous to and during the fall of snow in quantity, the temperature continues about 32 deg. It should seem that the evolution of the constituent caloric of the water produces the same effect when ice is formed in the atmosphere, as when it is formed in water. The structure of a crystal of snow demonstrates that a drop of rain is also formed by the union of a great number of smaller drops. When these come together in the act of freezing, and suddenly, they form a nucleus of white spongy ice, which, by its extreme coldness, becoming incrusted with clear ice from the water it collects in its descent, constitutes hail as we usually see it. Sometimes, however, the nucleus falls unincrusted, which is a prognostic of sharp frosts. Hail has been likewise observed perfectly transparent, and having the form of an oblate spheroid, showing that it consisted of drops which had been frozen entire in falling with a rotary motion.

The forms assumed by the suspended water in the interval between the first precipitation and the descent of rain afford a copious field of observation. These are not as might be hastily supposed, the sport of winds, changing with every movement of the containing medium. Indeed the atmosphere, at the height where the clouds usually appear, is undisturbed by the various obstacles which throw it into contending streams and eddies near the surface of the earth, and flows in a more direct and even current. Accordingly, the particles of water which it contains are allowed to assume a certain arrangement; and constitute a form, which is often equally well defined at a distance with that of solids, although, were we to penetrate it, we should perceive only the gray mist.

By the term cloud is meant a mass of vapor, more or less opaque, formed and sustained at considerable heights in the atmosphere, probably by the joint agencies of heat and electricity. The first successful attempt to arrange the diversified forms of clouds, under a few general modifications, was made by Luke Howard, Esq. We shall give here a brief account of his ingenious classification.

The *simple* modifications are thus named and defined: 1. *Cirrus.* Parallel, flexuous, or diverging fibres, extensible in any or in all directions. 2. *Cumulus.* Convex or conical heaps, increasing upwards from a horizontal base. *Stratus.* A widely extended, continuous horizontal sheet, increasing from below.

The *intermediate* modifications which require to be noticed are, 4. *Cirro-cumulus.* Small well-defined roundish masses, in close horizontal arrangement. 5. *Cirro-stratus.* Horizontal, or slightly inclined masses, attenuated towards a part or the whole of their circumference, bent downward, or undulated, separate or in groups, consisting of small clouds having these characters.

The *compound* modifications are, 6. *Cumulo-stratus.* The cirro-stratus, blended with the cumulus, and either appearing intermixed with the heaps of the latter, or superadding a wide-spread structure to its base.

7. *Cumulo-cirro-stratus*, vel *Nimbus.* The rain cloud. A cloud or system of clouds from which rain is falling. It is a horizontal sheet, above which the cirrus spreads, while the cumulus enters it laterally and from beneath.

The *cirrus* appears to have the least density, the greatest elevation, the greatest variety of extent and direction, and to appear earliest on serene weather, being indicated by a few threads penciled on the sky. Before storms they appear lower and denser, and usually in the quarter opposite to that from which the storm arises. Steady high winds are also preceded and attended by *cirrus* streaks, running quite across the sky in the direction they blow in.

The cumulus has the densest structure, is formed in the lower atmosphere, and moves along with the current next the earth. A small irregular spot first appears, and is, as it were, the nucleus on which they increase. The lower surface continues irregularly plane, while the upper rises into conical or hemispherical heaps: which may afterwards continue long nearly of the same bulk, or rapidly rise into mountains. They will begin, in fair weather, to form some hours after sunrise, arrive at their maximum in the hottest part of the afternoon, then go on diminishing, and totally disperse about sunset. Previous to rain, the cumulus increases rapidly, appears lower in the atmosphere, and with its surface full of loose fleeces or protuberances. The formation of large cumuli to leeward in a strong wind indicates the approach of a calm with rain. When they do not disappear or subside about sunset, but continue to rise, thunder is to be expected in the night. The *stratus* has a mean degree of density, and is the lowest of clouds, its inferior surface commonly resting on the earth or water. This is properly the cloud of night appearing about sunset. It comprehends all those creeping mists, which in calm weather ascend in spreading sheets (like an inundation of water,) from the bottom of valleys, and the surfaces of lakes and rivers. On the return of the sun, the level surface of this cloud begins to put on the appearance of cumulus, the whole at the same time separating from the ground. The continuity is next destroyed, and the cloud ascends and evaporates, or passes off with the appearance of the nascent cumulus. This has long been experienced as a prognostic of fair weather.

The *cirrus* having continued for some time increasing or stationary, usually passes either to the cirro-cumulus or the cirro-stratus, at the same time descending to a lower station in the atmosphere. This modification forms a very beautiful sky; is frequent in summer, an attendant on warm and dry weather. The *cirro-stratus*, when seen in the distance, frequently gives the idea of shoals of fish. It precedes wind and rain; is seen in the intervals of storms; and sometimes alternates with the cirro-cumulus in the same cloud, when the different evolutions form a curious spectacle. A judgment may be formed of the weather likely to ensue by observing which modifications prevails at last. The solar and lunar *halos*, as well as the paahelion and paraselene (mock sun and mock moon,) prognostics of foul weather, are occasioned by this cloud. The cumulo-stratus precedes, and the nimbus accompanies rain.

DEW.

This meteorological phenomenon has of late particularly engaged the attention of philosophers. The first facts that could lead to the explanation of this hitherto little understood subject are due to the late Mr A. Willson, Professor of Astronomy in Glasgow, and his son.

Dr. Wilson had previously, in 1781, described the surface of snow, during a clear and calm night, to be 16° colder than air two feet above it; and in the above paper he shows, that the deposition of dew and hoar-frost is uniformly accompanied with the production of cold. He was the first among philosophical observers who noticed this conjunction. But the different force with which different surfaces project or radiate heat being then unknown, Dr. Wilson could not trace the phenomena of dew up to their ultimate source. This important contribution to science has been lately made by Dr. Wells, in his very ingenious and masterly Essay on Dew.

Phenomena of Dew.—Aristotle justly remarked, that dew appears only on calm and clear nights. Dr. Wells shows that very little is ever deposited in opposite circumstances; and *that little* only when the clouds are very high. It is never seen on nights both cloudy and windy; and if in the course of the night the weather, from being serene, should become dark and stormy, dew which had been deposited will disappear. In calm weather, if the sky be partially covered with clouds, more dew will appear than if it were entirely uncovered.

Dew probably begins in the country to appear upon grass, in places shaded from the sun, during clear and calm weather, soon after the heat of the atmosphere has declined, and continues to be deposited through the whole night, and for a little after sunrise. Its quantity will depend in some measure on the proportion of moisture in the atmosphere, and is consequently greater after rain than after a long tract of dry weather: and in Europe, with southerly and westerly winds, than with those that blow from the north and the east. The

direction of the sea determines this relation of the winds to dew. For in Egypt, dew is scarcely ever observed except while the northerly or Etesian winds prevail. Hence also dew is generally more abundant in spring and autumn than in summer. And it is always very copious on those clear nights which are followed by misty mornings, which show the air to be loaded with moisture. And a clear morning, following a cloudy night, determines a plentiful deposition of the retained vapor. When warmth of atmosphere is compatible with clearness, as is the case in southern latitudes, though seldom in our country, the dew becomes much more copious, because the air then contains more moisture. Dew continues to form with increased copiousness as the night advances from the increased refrigeration of the ground.—[*First Lines of Science.*

Interesting Philosophical Facts.

The change of property which takes place when chemical attraction acts, is not confined to metals, but is a general result in every case when different bodies are brought into this state of combination or chemical union. Frequently we find, that the properties of each body are totally changed; and substances, from being energetic and violent in their nature, become inert and harmless and *vice versa*. For instance, that useful and agreeable substance, culinary salt, which is not only harmless, but wholesome, and absolutely necessary to the well being of man, is composed of two formidable ingredients, either of which taken into the stomach, proves fatal to life; one of these is a metal, and the other an air; the former is called *sidium*, and the latter *chlorine*. When presented to each other, the violence of their nature is manifested by their immediate bursting out into flame, and instantly they are both deprived of their virulence. Can any thing be more striking than the change of properties in this case; and who could have supposed that the culinary salt is composed of a metal united to an air?

The medicine called Glauber's salt is another instance; it is composed of caustic poisons of different kinds; one called oil of vitrol and the other barilla or soda.—There are also two substances known to chemists which are disgustingly bitter liquids; one is called nitrate of silver, and the other hydrosulphate of soda; when mixed, they form a compound of considerable sweetness. But the atmosphere which we breathe is the most extraordinary of all instances; it must be surprising, to those who are acquainted with the fact, that atmospheric air, indispensable as it is to life, is composed of the same ingredients as that most violent and destructive liquid called *aqua fortis*, or nitric acid. This powerful acid, by being made to act upon sugar, the sweetest of all things, produces a substance intensely bitter to the taste. Charcoal is, of all known substances, the most difficult to convert into vapor, so much so, indeed, that the conversion has never been yet decidedly effected; it is also a very solid substance; and a diamond which is nothing but crystalized charcoal, is one of the darkest bodies in nature.—Sulphur, in the solid state, is also a hard substance, and to hold it in vapor requires a high temperature. But when these two substances, carbon and sulphur, are made to combine chemically, so as to form the substance called bisulphuret of carbon, their properties are strikingly changed. Instead of the compound being hard it is a thin liquid, and is not known to freeze or solidify at any degree of cold that can be produced. Instead of the compound being difficult to evaporize, it is of all liquids one of the most evaporable. Charcoal is the blackest substance with which we are acquainted; sulphur is of the most lively yellow hue; but the compound is as colorless as water. A new smell and taste are acquired, and, in a word there is not one point of resemblance, with the component. These facts are strikingly illustrative of the change of properties which follows on the exertion of chemical attraction between the ultimate particles of bodies.—[*Donavon's Chemistry.*

ANIMALS.

QUADRUPEDS.

Quadrupeds are a large and useful class of animals, whose generic characters are these; their bodies are covered with hair; they have four feet; they are viviparous; and the females suckle their young.

Quadrupeds are the most important creatures to man, and deserve his attention more than the inhabitants of either the air or the water. They inhabit the same soil with man; and among them are found beings possessing a greater share of instinct than the inhabitants of either air or water; they breathe through their lungs like the human species; like these they are viviparous: they have also warm red blood circulating through their veins; and, however mortifying the reflection to human pride, many of them, both in their internal and external form, bear a strong resemblance to man; the interior structure of the ape kind so nearly resembles that of the human kind, that anatomists can scarcely discover where the peculiarity exists.

Though the character of quadrupeds are so obvious, yet as all the parts of nature are united together to form one grand whole, there are several species, which seem to be of an equivocal nature, and which form the links uniting different animals together: as the bat and porcupine, the former of which possesses wings, and the latter quills, like birds; the armadillo is covered with a hard shell, by which it seems to partake of the nature of insects or snails; and the seal and the morse, though evidently of the quadruped kind, are furnished with fins, and reside almost constantly in the water.

Quadrupeds, like all other animals, are wisely adapted by Providence to their respective situations and nature. Those which turn up the ground in pursuit of their food, have sharp snouts; others, which require a keener scent, as dogs, particularly those of the chase, have long noses, whereby the olfactory nerves are more perfect; while others, of rapacious nature, have short thick noses, where their jaws have a greater muscular power, as those of the lion; and all granivorous animals have a strong tendinous ligament, extending from the head to the middle of the back, to enable them to hold down their head to the ground; the fore teeth of these animals are also edged, for the purpose of cutting their food; but those of carnivorous animals are sharp, and serve rather as weapons of offence. In both, however, the surface of the grinding teeth are unequal and jagged, locking into each other when the jaws are brought into contact. The stomach of carnivorous animals is also small and glandular; and affords such juices as are best adapted to digest and macerate its contents; but those animals which subsist on a vegetable diet, have four stomachs: all serve as so many laboratories to prepare the food for the nourishment of the body: and, in general, granivorous animals, whose food is easy produced, have a large capacious stomach, and capable of dilation; whereas carnivorous creatures have the stomach more contracted, and the intestines curtailed, whereby they are enabled to subsist for a longer time without food. Strong large animals, which are neither formed for pursuit or flight, as the elephant, rhinoceros, sea-horse, &c. have thick massy legs to support their unwieldy bodies.—While deers, hares, and other creatures whose safety depends on flight, and who are beset by numberless enemies, have long, slender, but muscular legs. Those formed for a life of rapacity, have their feet armed with sharp claws, which in some species are retractile, as those of the cat; and, on the contrary, peaceful animals are generally furnished with hoofs, which often serve as weapons of defence; and the feet of those which subsist on fish, have membranes beween the toes, the better to enable them to pursue their prey in the watery element.

The larger species of quadrupeds are in general the most harmless and inoffensive; and as sensible of their own inocence, they possess the most courage; while the more rapacious animals are inferior to those in size, and also in courage; and, except the dog, there is no carnivorous quadruped that will voluntarily attack another animal when the odds is against him.

Thus nature has furnished the most inoffensive animals with superior size and strength; and opposed to them the carnivkinds, which possess more cunning and agility, whereby an equilibrium is preserved between the numbers of the different kinds

The carnivorous animals are in general confined to their retreats during the day, and commit their depredations by night; when the forest resounds with the tremendous roar of the lion; the hideous yell of the tiger; the barking of the jackal; the dismal cry of the hyæna; and the hissing of the serpent. Most of these kind of animals take their prey by surprise from some ambush, where they lay in wait, more than by a regular pursuit. There are some, however, which pursue in companies, mutually encouraging each other by their cries, as the jackal, syagush, wolf, and dog. Carnivorous animals will sometimes devour the lesser rapacious species; but they generally prefer the flesh of granivorous creatures, and commit their devastations among the peaceful domestic flocks and herds. The most defenceless creatures have different methods of providing for their safety. Some find protection in the holes they form in the earth; others are enabled to escape their pursuers by flight; others, again, unite for their mutual defence, and gain by numbers what they want individually in strength; and, lastly, others avoid their enemies, by placing some of their own company as centinels, to warn them of the first approach of danger; a duty in which they are seldom negligent, and for the neglect of which they are invariably punished by the rest.—[*Book of Knowledge.*

METALS.

SILVER.

Silver is the whitest of all metals, considerably harder than gold, very ductile and malleable, but less malleable than gold; for the continuity of its parts begins to break when it is hammered out into leaves of about the hundred and sixty thousandth of an inch thick, which is more than one third thicker than gold leaf; in this state it does not transmit the light. Its specific gravity is from 10.4 to 10.5 It ignites before melting, and requires a strong heat to fuse it. The heat of common furnaces is insufficient to oxidize it: but the heat of the most powerful burning lenses vitrifies a portion of it, and causes it to emit fumes; which, when received on a plate of gold, are found to be silver in the metallic state. It has likewise been partly oxidized by twenty successive exposures to the heat of the porcelain furnace at Sevres. By passing a strong electric shock through a silver wire, it may be converted into a black oxide; and by a powerful galvanic battery, silver leaf may be made to burn with a beautiful green light. Lavoisier oxidized it by the blowpipe and oxigen gas; and a fine silver wire burns in the kindled united stream of oxigen and hydrogen gases. The air alters it very little, though it is disposed to obtain a thin purple or black coating from the sulphurous vapors which are emitted from animal substances, drains, or putrefying matters. This coating, after a long series of years, has been observed to scale off from images of silver exposed in churches; and was found, on examination, to consist of silver united with sulphur.

Lyceum Seminaries.

Almost every day brings to light some new fact to substantiate the paramount importance of the self-supporting principle in education. Public sentiment, even in the slave states, is becoming decidedly in favor of schools founded upon that principle. Several are already in successful operation at the south, others are about commencing.

Mr. Steele, who has had a flourishing Seminary for five or six years in St. Marys, Georgia, has recently given us a most interesting statement of experiments tried by him in the southern section of the most southern state in our Union. He confirms the opinion we formed on our visit to the south, that the notion that white people cannot labor there, is a mere whim. He is fully convinced from his experience and that of others, that manual labor is highly favorable to health, at the south as well as every where else. He also states, that so far from being a discredit to a man to labor, it will give him greater respectability and greater influence.

In June last, Mr. Steele opened a school, upon the self-supporting plan, about thirty miles from St. Marys, and had immediately two or three times as many applicants as he could accommodate. He has in his school ten young men twenty years of age and over, several of whom have commenced a three years course, wholly upon the self-supporting plan. Several of the most wealthy and respectable citizens of St. Marys have made applications for their sons, with the particular object of having them *work*. And even some young ladies of respectable families, made application to take a part in the domestic employments, under Mrs. Steele.

From several interviews with Mr. S. we have no doubt of his success, nor that a Lyceum Seminary could be put immediately into successful operation, in each of the thousand counties in the United States, if the men could be found to take charge of them.

Banking.

Abstract of a Lecture, delivered before the Boston Mechanics' Institution, on Thursday Evening, January 21st, 1830, by Hon. William Sullivan:

Banks are of three kinds, banks of deposit, banks of discount, and banks of circulation. When an individual provides himself with a secure place for keeping, and gives notice that he will take charge of people's money, it is called a bank of deposit. The banker pays the depositer his money when called for, either in specie, or gives him his promise on paper, which is called a bank-bill. When the banker owns moneys himself, and offers to lend it for a certain amount of interest which he deducts from the depositer's cash, it is a bank of discount. In this country, these three different banks are united; our banks are banks both of deposit, discount, and circulation.

The first bank was established at Venice, about 650 years ago. A number of individuals, when they enlisted under the banners of the Cross, before they started for the Holy Land, looked about for some secure place to deposit their treasures; and as Venice was then a rich and prosperous city, they placed them there; this was therefore a bank of deposit. The second bank was established at Amsterdam, 220 years ago, and was also a bank of deposit. The third and most important bank that was ever founded is the Bank of England, which was established about the year 1693, which was the period when the British national debt commenced, and the Government, for the purpose of raising money, granted certain privileges, and among others, that of Banking. The bank of England had at one time in circulation £24,000,000. It is rather difficult to realize what an amount this is. If it were brought into American dollars, and they were placed so that the edges would touch, they would occupy a plain containing 253 *square miles!* If they were piled one above another, the column (allowing $10 to an inch) would be 168 *miles high!* If they were placed in teams, and drawn by oxen, (allowing 1 ton's weight to each pair of oxen) it would take *all Boston Common* for the oxen to stand upon!

The British Debt at present amounts to £785,000,000. The whole number of inhabitants on the earth, according to the most accurate calculation, is 737,000,000. Consequently, if the British debt was equally assessed upon every inhabitant of the earth, they would each be required to pay £1 1*s.* 3*d!*

T.

LYCEUMS.

Boston Lyceum.

The spirited discussion, commenced at the last meeting of the Boston Lyceum, on the question of the qualification of business men for public stations, will be continued at the meeting on Thursday evening next.

VIRGINIA LYCEUM.

An Education Society for Virginia, which was organized a few months since, is acting in behalf of schools in that state.

TENNESSEE LYCEUM.

Several Town and County Lyceums and a State Lyceum, are producing the happiest results in Tennessee.

KENTUCKY LYCEUM.

By the enlightened and patriotic efforts of Rev. Benjamin O. Peers, of Kentucky, who has in Lexington probably as good a school as there is in the Union, and the co-operation of numerous other individuals in that state, a Kentucky Lyceum was organized two or three years since, and has already produced great results. Numerous town and some county Lyceums, are in successful operation in that state.

INDIANA LYCEUM.

Besides an Historical Society in Indiana, Lyceums flourish in that state.

OHIO LYCEUM.

Numerous Lyceums are in a most flourishing condition in Ohio, and they have awakened interest and produced effort in behalf of Education through the state generally.

ILLINOIS LYCEUM.

In Illinois, a State Lyceum, and numerous Town Lyceums, are in successful operation, with a prospect of extending into all the counties and towns.

MISSOURI LYCEUM.

The St. Louis Lyceum has done much for Education, not only in their own state, but for the Great West.

LOUISIANA LYCEUM.

In New Orleans, and several other places in Louisiana, Lyceums have flourished, and awakened interest and effort through the state.

ALABAMA LYCEUM.

Lyceums are becoming common in Alabama, since the measures in behalf of a State Lyceum, a year since.

NORTH CAROLINA LYCEUM.

A State Society for the promotion of Education was organized about a year since in North Carolina, which has already awakened much interest in that state, and promises much more.

MISSISSIPPI LYCEUM.

A Lyceum has recently been organized at Natchez, for Adams County, with a design of extending the system through the state of Mississippi.

BOOK OF NATURE.

WIDE AND EXTENDED PLAINS

Also cover a considerable portion of the face of our globe, and these are not without their uses. Did nothing but huge mountainous districts, intercepted by deep valleys, present themselves, what room would be left for tillage? What incredible labor and fatigue in travelling! What insurmountable barriers to the purposes of trade and commerce! But these facilitate the operations of agriculture, and cause the stubborn glebe to be broken up with ease. Carriages with immense burdens glide along on the level of a railway; the traveller on horseback, enveloped in darkness, pursues his journey without danger of stumbling; the loaded waggon is wheeled onwards without interruption; and the swift post flies with astonishing clerity on the wings of business.

The last thing we shall touch upon in the general appearance of the surface of the *dry land* is the

VERDANT COLOR OF THE EARTH;

For whatever diversity of hue there may be in natural objects when viewed separately, there can be no doubt but this is the most general and prevailing color; and as nature does nothing in vain, the circumstance certainly ought not to be overlooked. In this the wisdom and goodness of our Creator will appear by attending to the following considerations. Had the robe of nature assumed a more light or brilliant cast, and the generality of objects appeared of a *white, yellow, orange,* or *red* complexion, it would have been too much for the strength of our nerves, and instead of being refreshed and delighted, we should have been blinded and overpowered with the dazzling splendor.

Had she put on a more sombre aspect, and been clothed with a *violet, purple, or blue* mantle, the prospect must have been sad, dismal and gloomy, and instead of imparting to the animal spirits the exhilarating draught to keep them in full play, would have suffered them to subside into dejection and despondency. To prevent these two extremes, nature is clothed with a *verdant mantle*, being that proper combination of light and shade that neither dazzles nor darkens the prospect, which rather refreshes than fatigues the eye, strengthens and invigorates instead of weakening the powers of vision, and creates in the soul that increasing delight and lengthened rapture which the poet had in view when he wrote the following lines:

——— 'Gay green!
Thou smiling Nature's universal robe;
United light and shade! where the sight dwells
With growing strength and ever new delight.'

VEGETABLES.

'Your contemplation farther yet pursue:
The wondrous world of Vegetables view!
See varied Trees their various fruits produce,
Some for delightful taste, and some for use.
See Sprouting Plants enrich the plain and wood,
For physic some, and some designed for food.
See Fragrant Flowers, with different colors dy'd,
On smiling meads unfold their gaudy pride!'

From the verdant color of creation the transition is natural to a consideration of the objects by which it is occasioned. These are the numerous vegetable tribes which cover and adorn the surface of our globe in all that variety of Trees, Shrubs, and Herbs which we behold.

Here Trees like stately turrets raise their lofty heads; there, the more pliant and humble thick-set shrubs unite their foliage; while the herbaceous tribe in mingled profusion cling more closely to the earth, and cover the fields with their verdure. Man cannot contemplate the vegetable creation without recalling the idea of beauty, sweetness, and a thousand charms that captivate the senses. The perfume of the rose, the brilliancy of the lily, the sweetness of the violet, and the stately magnificence of the forest, successively catch his attention and delight him.

THE STRUCTURE OF VEGETABLES,

In all their varied forms, is truly wonderful. How excellently adapted are the *roots* for taking hold of their parent earth, as well as for drawing nourishment for the support of the plant, and imbibing moisture from the neighboring soil! How commodiously are the various tubes and fibres which compose the *trunk* or *stalk* arranged for the motion of the sap upwards to all the extremities of the leaves and branches! How nicely are the *leaves* formed for the important services they are made to yield in the economy of vegetation! See how they serve to concoct and prepare the sap; how they prevent by their shade the moisture at the root from being too speedily evaporated; how they embrace and defend the flower in the bud, and carefully conceal the fruit before it arrives at maturity; and by catching the undulations of the gentle breeze how they convey that motion to the trunk and branches, which (for aught we know,) may be as essentially necessary to the vegetable life as exercise is to animal health. What an excellent clothing does the *bark* afford, not only for protecting the stem and branches from external injury, but from the hurtful extremes of heat and cold? What evident marks of wisdom and design do the *Flowers* evince in their beautiful and delicate construction! how nicely are they formed for the protection and nourishment of the first and tender rudiments of the fruit! and when it has attained more firmness and solidity, how readily do they relinquish their charge, and drop off in decay when no longer necessary! How wonderfully does the *fruit* in some classes, envelope and protect the seed till it has arrived at maturity; and, lastly, what a passing strange piece of organized mechanism is the *seed* itself, and being necessary for the reproduction of its species, what a remarkable provision is made for its preservation and succession! What but the wisdom of a Deity could have devised that those seeds which are most exposed to the ravages of the inhabitants of the forest, should not only be doubly, but some of them trebly enclosed! that those most in request as articles of food should be so hardy and abundantly prolific; and that seeds in general, which are the sport of so many casualties, and exposed to injury from such a variety of accidents, are possessed of a principle of *lasting vitality*, which makes it indeed no easy matter to deprive them of *their fructifying power*. Plants are also multiplied and propagated by a *variety of ways*, which strengthen the provision for their succession.

Nor is the finger of Providence less visible in the means of diffusing or spreading abroad vegetables, than in the provision made for keeping up their succession. The earth may be said to be full of the goodness of the Lord; but how comes it to pass, that in parts untrod by man, and on the tops of ruinous buildings, so many varied specimens of the vegetable creation are to be found? It is not from the manner in which nature's great husbandman scatters his seeds about? While the seeds of some plants are made sufficiently heavy to fall down and take up their abode nigh the place of their nativity; and others, after having been swallowed up by quadrupeds, are deposited in the neighboring soil; some are carried by the fowls of the air to places more remote, or being furnished with a soft plumage, are borne on the winds of heaven to the situations allotted for them! To prevent some from pitching too near, they are wrapt up in elastic cases, which bursting when fully ripe, the prisoners fly abroad in all directions; to prevent others from straying too far, they are furnished with a kind of grappling-hooks that arrest them in their flight, and attach them to the spot most congenial to their growth.

In the construction of plants we observe a considerable difference in the *consistence* of the three classes. Compared with the Shrubby race, how hard, firm, and tenacious is the trunk of the majestic Oak; and, compared likewise with the herbaceous tribe, how woody, tough, and elastic is the hawthorn twig; but for this, how could the mighty monarch of the wood have been able to withstand the fury of the tempest; and, while the more humble and lowly shrubs stand not in need of such firmness of texture, their pliability and elastic toughness, together with the prickly coat of mail by which they are enveloped, render them less susceptible of injury in their exposed situation.

Softness, united with a still greater degree of flexibility, are the distinguishing characteristics of the herbaceous order; and how wisely has this been ordered for the various purposes for which they were created; with the firmness of trees, to what a prickly stubble must nature's soft and downy carpet have given way? with the tenacity of Shrubs, how would it have answered as food for our cattle?

There are besides a number of other properties and peculiarities in the vegetable kingdom, in which the wonderful working of Divinity shines pre-eminent. How strange, for instance, that if a seed is sown in a reversed position, the young root turns of itself downwards, while the stem refuses to sink deeper in the soil, and bends itself round to shoot up through the surface of the earth. How surprising, that when the roots of a tree or plant meet with a stone or other interruption in their progress underground, they change their direction and avoid it. How amazing, that the numerous shoots which branch out from the root in quest of moisture, pursue as it were by instinct the tract that leads to it; will turn from a barren to a more fertile soil; and, that plants shut up in a darksome room, bend or creep to any aperture through which the rays of light may be admitted.

In these respects the vegetable tribes may be said to possess something analogous to animal life; but here the resemblance does not drop—how surprising the phenomenon of what we call the *sleep* of plants, and the sexual system of Linnæus, founded on the discovery that there exists in the vegetable, as well as in the animal kingdom, a *distinction of sexes!*

What amazing variety of size, of shape, and of hue, do we discover among this multitudinous order of things! What different properties do some possess from others! and what a near approach do a few make to that superior order immediately above them, in the scale of existence! The *Sensitive* plant, when slightly touched, evinces something like the timidity of our harmless animals; the *Hedysarum Gyrans*, or moving plant of the east, exhibits an incessant and spontaneous movement of its leaves during the day, in warm and clear weather; but in the night season, and in the absence of light and heat, its motions cease, and it remains, as it were, in a state of quiescence; and the American *Venus' Fly-trap*, like an animal of prey, seems to lie in wait to catch the unwary insect. These are wonderful properties of the vegetable creation, but these are necessary in the infinitude of the works of creation, as links to connect it with the order of animals, and preserve unbroken the most minute gradations in nature's universal chain!

Flowers are undoubtedly among the most exquisite pieces of nature's workmanship. What beautiful tints do they display! what lively colors do they unfold! what variegated beauties do they discover! and what delightful perfumes do they emit! In view of these well might the poet exclaim—

——— 'Who can paint
Like nature? Can imagination boast
Amid its gay creation, hues like her's?
Or can it mix them with that matchless skill,
And lose them in each other, as appears
In every bud that blows?'

But we have no less to admire in the general contrivance and delicate structure of their several parts, and beautiful harmony of the whole than in the laying on of the colors by which they are embellished.

The diversity of shape, and form, and complexion, in those of different kinds, is not more remarkable than that *no two are to be found exactly alike*, even of the same species, and growing on the same stalk or knot.

Nor should the aromatic fragrance which those beautiful sons and daughters of nature send forth, more excite our gratitude, than that *well ordered succession* by which the pleasures we receive from these transitory visitants, are lengthened out and protracted all the year round.

Before winter with his cloudy front has taken his departure, the early *Snow drop* boldly steps forth in his pure white robe, the *Crocus* next, with an air of timidity peeps out, and, as if afraid to venture, keeps close to the earth; then comes the *Violet* with her varied beauties, accompanied by the sparkling *Polyanthus*, and splendid *Auricular;* afterwards groves of *Tulips* display their rich and gaudy attire, followed by the *Anemone* in her spreading robe. Now the *Ranunculus* expands the richness of his foliage, the *Sun-Flower* shoots forth his golden rays, and the beautiful *Carnation*, with a numerous train, bring up the rear, and close the procession.

THE USE OF VEGETABLES.

Trees.—Those stupendous specimens of creating art, spread not their wide-extended roots, nor lift their lofty heads in vain. Beneath their cooling shades, our flocks and herds find a comfortable asylum from the scorching rays of the summer sun; the wild stragglers of the forest have a place of refuge among their woods and thickets; whilst the feathery songsters of the grove build their little dwellings in security, and sing among their branches, 'as for the stork the fir-trees are her house.'

But in what a variety of respects, besides affording the inhabitants of warm climates an agreeable shelter from the mid-day heat, do they yield their services, or are made subservient to the use of man. Some, as the bread-fruit-tree of the Pacific Ocean, the cabbage-tree of East Florida, the tea-tree of China, the sugar-maple-tree of America, the coffee-tree and sugar-cane in the West Indies, and the numerous luxurious fruit-bearing trees scattered over the face of the globe, contribute to our wants in form of food. The fountain-tree on one of the Canary Islands is said by voyagers to furnish the inhabitants with a supply of water; while the paper-mulberry-tree of the Southern ocean, and the cotton-shrub of America, provide us with materials for clothing. The candle-berry-myrtle presents the inhabitants of Nankeen with a substitute for animal tallow. The salt-tree of Chili yields a daily supply of fine salt. The cinnamon, nutmeg, clove and pimento, furnish us with a supply of spices. The Jesuit's bark, manna, senna, and others, produce a variety of simple but useful medicines. Some trees yield a precious balsam for the healing of the nations; some a quantity of turpentine and rosin, and others give out their quota of valuable oils and gums.

Nor are the trees serviceable only in a natural state; by the assistance of art, some are converted into houses to protect man from the inclemency of the weather, or are moulded into a variety of forms for the purposes of building and domestic comfort; others raise the huge fabric of the floating castle or bulky merchantman, by which the articles of industry and commerce are transported, and a communication kept up with the remotest regions.

Our limits do not permit us to enlarge upon these specimens, or point out the various uses to which a number of other woods in general use may be applied; but the reader's own thoughts may suggest these, as they are sufficiently obvious; and mean time we will proceed to the order of

Shrubs.—As much that has been already said respecting the utility of trees, may be applied in common to this order, we will confine ourselves to the three particulars in which they may be said to differ most from the former; the first is their stature, the second their greater pliability, and the third the prickly armor by which many of them are covered.

Some shrubs, as the goosebury, the rasp, and the currant bushes, so common in our gardens, gratify the palate, and temper the blood during the summer months with agreeable and cooling fruit; others, as the rose, delight and please the eye by the beauty of their flowers; or regale the olfactory nerves with the fragrance of their perfumes, as the sweet-scented briar; but how could these several ends have been accomplished if, by a more exalted exposure, the fruit-bearing bushes had placed their treasures beyond our reach—every rose, with its back turned to us, had been 'born to blush unseen'—and each aromatic shrub, removed far above the sense of smelling, had literally been left

'To waste its sweetness in the desert air.'

With regard to that considerable share of pliant elasticity possessed by some of them, how easily does this admit the branches to be turned aside, and to resume their former position, in gathering of the fruit or flowers, and how serviceable does this property enable us to make some of them in the form of hoops, baskets, or wicker-work of any description; while the sharp-pointed prickles by which they are armed, serve not only as weapons of defence for themselves, but furnish us with cheap and secure fences against the inroads of straggling cattle, and the unwelcome intrusion of the unprincipled vagrant.

Herbs—in an essential manner may be said to constitute the food of man and beast, as well as to yield their assistance in an infinity of ways; and behold! in what profusion they spring forth; in what numerous bands they appear. Yonder a field of golden-eared wheat presents to the view a most prolific crop of what forms the chief part of the staff of life. Here a few acres of long-bearded barley ripen, to provide us with our favorite beverage. On the right hand stand the tall-growing and slender oats and flowering potatoes, to revive and keep alive the hopes of the poor; while on the left the heavy-laden bean, and dow-creeping pea, in lengthened files vegetate to furnish provender for our horses; or the globular turnip increases its swelling bulk to lay up for our herds a supply of food when the softer herbage of the field is locked up by the congealing powers of winter.

But what a spontaneous crop of luxuriant herbage do our meadows present in the appointed season, and in what a profusion of wholesome pasture do the numerous flocks of sheep and cattle roam? Whether they frequent the solitary holm, beside the still waters, or range the pathless steep, still they are followed by the goodness of the Lord; myriads of grassy tufts spring up on every side, and they are satisfied out of the treasures of Providence.

But the herbaceous productions of the field are not universally calculated for the purposes of food. In some places numerous groups of tall, thin, flexible plants make their appearance, whose filmy coats being properly manufactured, are converted into the most costly and delicate raiment; while others of a coarser texture furnish the mariner with wings to his vessel, cordage to tighten his masts, or the ponderous cable to stay his bark in the midst of the fluctuating element.

But here their services do not end; for, when worn out in one shape they assume a new form, and not only furnish the material from which is formed the wrapper of the manufacturer, and the package of the merchant, but that invaluable article upon which we write—upon which we are able to hold converse with friends at a distance—and *by means of which, man transmits his thoughts to man, and generations unborn are enabled to hold converse with past ages.*

By means of these pliant productions we are also supplied with a variety of seeds and oils, of much request in common life; and wherever disease is known, there, we have reason to believe, medicinal herbs spring up as antidotes; some communicating their healing virtues by the root, some by the leaves, and others by the flowers or seeds. A number of these and many others of the greatest utility in medicine, come forth in various places of the globe without the aid of art, and are found growing wild among the herbs of the field;—but these are not the effects of chance. They were originally planted by the hands of Omnipotence, at the suggestion of Divine benevolence, prompted by Omniscience. It was the Lord who created medicines out of the earth; he foresaw the distresses of his creatures, and in pity to their calamities, not only commissioned the balm to spring up in Gilead for the healing of the eastern tribes, but has spread abroad that boundless variety of medicinal plants, which are to be found in every climate, suited to the diseases of those particular spots, where Providence, all wise, hath fixed the lot of their inhabitants.

What a beautiful variety of nutritious esculents, and exquisitely-formed flowers, do our gardens present! Here the Parsley with her frizzled locks, the Celery with her out-stretched arms, the Asparagus with his towering stem, the Artichoke with his turgid top, the Cauliflower with her milky dome, the Cabbage with her swelling form, a variety of greens, with their curled leaves, and long files of pease and beans, await in silence their master's call to do homage at his table; and here too is deposited, among a number of valuable and useful roots, that excellent farinaceous substitute for bread, the wholesome potatoe.

QUESTIONS on LYCEUM No. 18.

What empire was founded by Cyrus, and at what time?

In which was Cyrus most comely, body or mind?

What were his prominent habits in his early youth?

Was he popular or unpopular in his early life?

What was his age, when he accompanied Astyages, against the Assyrians?

How long did he continue the siege of Babylon, and with what success?

How did he treat the Jews after the close of this siege?

By whom was Cyrus foretold as the deliverer of the Jews?

Did he ordain his decrees in the name of the gods of the heathens or of the true God?

Was he naturally kind and amiable, or violent in his character?

What distinguishes animals from vegetables?

In what points is man distinguished from the inferior animals?

How does Linnæus divide animals?

What is the object of language?

In which state is there a cave containing epsom salts?

Where and when was the first Lyceum formed?

What are some of the different departments of the Lyceum system?

On what principle of our nature is the Lyceum system founded?